

“My garden is an expression of me”: Exploring householders’ relationships with their gardens

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ABSTRACT

Domestic gardens offer immense potential as sites for native biodiversity conservation. In urban areas they often comprise the largest land use, thus presenting an accessible and immediate way for urban dwellers to connect with nature and to support and enhance native biodiversity. This paper presents findings from a study of 55 domestic gardens undertaken in Dunedin, New Zealand, which explores householders’ relationships with their gardens. The study data was derived from two interviews with householders, two photo exercises (approximately a year apart), together with a number of biological studies of the gardens. Gardens proved to be very important for our householders; for physical and mental health, as an expression of ownership and identity, as sites for social relationships, for connecting with nature and as site of domestic produce production. Householders’ connections with nature were idiosyncratic, multifaceted and exhibited in ways that are more complex and varied than those usually considered by those working in the natural sciences and indeed biophilia supporters. We emphasize the importance of the people side of nature in seeking to build and support positive ecological change in the urban environment and the value of combining natural and social science approaches.

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1. Introduction – the garden relationship

Gardens matter, they constitute substantial proportions of the urban fabric, provide opportunities for supporting and interacting with nature and provide a range of social and health benefits. “Nature heals’ is one of the oldest therapeutic dicta”, wrote Theodore Roszak in 1996 (p.22). In his writing, he was attempting to draw psychiatrists’ attention to the need to recognise that access to nature can be an important factor when addressing the range and growth of psychological ills in western society. The importance of nature as central to peoples’ well-being has been emphasized with respect to children (Moore, 1997), and more recently by Louv (2008) who was concerned by the growing alienation of children from the natural world. Louv writes: “yet at the very moment that

the bond is breaking between the young and the natural world, a growing body of research links our mental, physical, and spiritual health directly to our association with nature” (Louv, 2008, p.3). The restorative and health benefits of nature are well established (De Vries, Verheij, Groenewegen, & Spreeuwenberg, 2003; Ivarsson & Hagerhall, 2008; Kaplan, 1995; Kjellgren & Buhrkall, 2010; Nielsen & Hansen, 2007). In today’s urban society, opportunities for contact with nature can be especially important, (Davies et al., 2009) and gardens offer such opportunities. However, studies to evaluate and measure connection to nature, have tended to focus on more ‘pristine’ sites, nature as separate, as in ‘going to nature’ (Mayer and McPherson Frantz, 2004; Perkins, 2010; Schultz, Shriver, Tabanico, & Khazian, 2004) rather than on what is immediately accessible (Clayton, 2007; Gross & Lane, 2007).

Gardens represent a large and undervalued wildlife resource (Davies et al., 2009), function as critical spaces in the spatial configuration of urban ecological landscapes (Goddard, Dougill, & Benton, 2009) and offer an alternative to the dominant “ontologies of nature as idealized, set apart, pre-cultural” (Crouch, 2009, p.292). Gardens allow nature to enter the reality of daily life. Their natural value though, eludes easy classification. Longhurst’s (2006) study of New Zealand gardens positions them as ‘paradoxical

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spaces' that transgress categories of culture and nature. Further, gardens exhibit distinct identities, reflecting local vernacular; culture, meanings, gender (Crouch, 2009) social class (Kirkpatrick, Daniels, & Zagorski, 2007) and micro-locational elements such as the difference between front and backyards (Kirkpatrick et al., 2007). Gardens are intimately connected with gardeners' own identities (Kiesling & Manning, 2010) where the act of gardening is itself an emotive activity (Brook, 2003). Garden relationships evolve, are dynamic and seldom static. In gardening, people enter into a mutually challenging relationship with nature, where humans seek to control nature (Power, 2005), commodify nature (Hitchings, 2006, 2007a) and to shape nature through deliberative attempts to attract and 'support' wildlife through gardening techniques or provisioning (e.g. bird feeding). In urban areas the values that gardens offer to people and wildlife can be seen as mutually reinforcing.

Given the widespread occurrence of gardens and the scale of gardening as an activity, the domestic garden is 'curiously' under-researched (Holbrook, 2008). Where garden studies have been undertaken they invariably reflect the garden as nature/wildlife or leisure/culture garden binary, with studies primarily manifesting either a social sciences or natural sciences approach. To a certain extent, a combination of both approaches falls within the definition of "conservation psychology" described as "the scientific study of the reciprocal relationships between humans and the rest of nature, with a particular focus on how to encourage the conservation of the natural world" (Saunders, 2003, p. 138). This relationship between people and nature and how people can be motivated to support native biodiversity in the urban environment through their gardens was the focus of a study undertaken in Dunedin, New Zealand in 2009 and 2010.

This paper emerges out of this study and reflects our particular interest in the relationship between gardening, well-being and contact with nature. The focus of this paper is on social attitudes to and interrelationships with the natural world as experienced in the domestic garden setting. It examines that relationship as it applies to the 55 households that took part in the Dunedin garden study. The focus is on the domestic garden as it occurs in industrialized countries and has particular resonance for understanding garden relationships as they occur in the UK, USA and Australia as well as New Zealand. The paper has two parts: in the first we explore gardens generally as sites for promoting well-being and connecting with nature. The second part of the paper presents findings from a study of domestic gardens in Dunedin, New Zealand.

2. The value of intimate contact with nature

One way of framing the relationship between people and nature is E. O. Wilson's biophilia hypothesis: namely that people have an 'innate tendency to focus on life and lifelike processes' and 'our existence depends on this propensity, our spirit is woven from it, hope rises on its currents' such that 'to the degree that we come to understand other organisms, we will place a greater value on them and on ourselves' (Wilson, 1984, p1–2). Proponents of the biophilia hypothesis infer that human well-being is intimately connected to the well-being of nature such that "the degradation of this human dependence on nature brings the increased likelihood of a derived and diminished existence" (Kellert, 1993, p.43). Even though the benefits of natural encounter have long been intuitive, the biophilia hypothesis offers a powerfully stated argument for the retention of natural places and encounters as well as their importance in supporting human health and well-being.

The health aspects of access to nature have been the focus of a number of important studies in the developing field of 'ecopsychology', which is based on the premise that there is

a connection between ill health in nature and ill health in people and a similarly reciprocal relationship for good health (Roszak, 1996). Living in greener environments has been found to be associated with improved vitality (Ryan et al., 2010) and health (De Vries et al., 2003; Nielsen & Hansen, 2007). Furthermore, contact with nature reduces, and can be an antidote for, mental ills (Kaplan, 1995). A number of studies have focused on assessing this relationship. One of the best known is the work of Frumkin (2001), who identifies the benefits of contact with nature for health. He gives a number of supportive examples; cardiovascular patients who had dogs were found to have a six times higher survival rate than their non dog-owning counterparts, cholecystectomy patients in a Pennsylvanian hospital who had tree views had statistically shorter hospital stays and needed less medication than those with brick wall views, and psychiatric patients showed improved coping ability and locus of control following a wilderness experience.

Actual physical contact with nature has been shown to be essential. While a natural view may be a compromise position for hospital patients, it is direct contact where most benefits can be detected. A number of studies have measured the comparative benefits of simulated/indirect as opposed to direct contact. Direct experiences provide more rounded and complex experiences (Duerden & Witt, 2010) and are associated with higher degrees of altered states of consciousness and energy (Kjellgren & Buhrkall, 2010). Though access to greenspace generally has positive health benefits; "it is the greenness of the direct surroundings of one's home that affects people's health most" and having a garden appears to also be beneficial (De Vries et al., 2003, p.1725).

These benefits have also been found in studies in 'horticultural therapy' (Frumkin, 2001). Positive benefits from connection with plants have been noted in breast cancer sufferers, for example (Unruh, Smith, & Scammel, 2000). Even small scale contacts can be beneficial. After a short eight-week pot plant growing programme, elderly Japanese residents in a care home demonstrated significant improvements in life satisfaction, social networks and less loneliness (Yee Tse, 2010). The emotional and social benefits for older people in caring for plants are complemented by physical benefits associated with being active (Ashton-Schaeffer & Constant, 2005; Bhatti, 2006). Another population group where the benefits of caring for plants have also been identified is children. There has been a resurgence in gardening directed at children, mainly through the growth of school gardening programmes. A review of the literature on school gardens undertaken by Blair (2009) found studies overwhelmingly reported beneficial outcomes for children. These findings are supported by a number of specific case-study based gardening projects (Lekies & Eames-Sheavly, 2007; McLennan, 2010). For children, "Daily hands on contact with natural settings is essential to children's health" (Moore, 1997, p.217). When living in urban areas, domestic gardens can provide the most immediate opportunity for people to engage with nature. It is estimated that some 90 million households in the USA have gardens and 35 million occupants describe themselves as gardeners (Kiesling & Manning, 2010). In the UK around 84% of the population has access to a garden, with around 52% involved in some form of cultivation (Bhatti & Church, 2004). Another British study estimates 67% of the population have gardening as a hobby (Gross & Lane, 2007).

Where access to private gardens is limited communal gardens have become surrogate sites for the type of contact with nature that the domestic garden provides and additionally provide social opportunities. In New York where there are upwards of 700 community gardens, Zukin (2009) describes the coming togetherness that gardens provide and asserts that such gardens are "tangible symbols of the constant struggle to put down roots in the city" (194). Intimate contact with nature through gardening is

conducive to people's well-being; domestic gardens we argue, offer the greatest and most immediate opportunity for such contact in cities.

3. Garden and gardening: sites of connection

Whilst acknowledging the importance of gardens as sites of connection with nature it is short-sighted to only study them as sites for the promotion of "nature". More realistically they represent sites of interaction with nature in which both control (e.g. removal of self introduced weeds) and compromise (e.g. acceptance of the presence of less desirable species in the garden such as lawn daisies) are evidenced (Clayton, 2007; Hitchins, 2006). As Hondagneu-Sotelo (2010, p.14), in her assessment of gardens in Southern California asserts "...because people conceive, construct and enjoy them. Gardens are best viewed as efforts to display the control of nature". There is something about the 'informality' of nature that seems to be at odds with garden 'culture', a fact detected by Head and Muir (2007) in their Australian study of some 265 gardens. They observed that most people struggle with the perceived messiness of nature, being reluctant to allow gardens to take their own ecological developmental course. As a consequence continual intervention becomes 'necessary' to achieve human acceptability. When also writing about Australian suburban gardens Timms notes; "Gardens are frail and ephemeral things, utterly dependent on the dedication of their carers and always teetering on the edge of ruin" (2006, p.2). People are, therefore, intimately involved in the formation of contemporary gardens which in turn are reflective of wider social and cultural complexities (Clayton, 2007).

What is it then that people value about gardening? A number of general themes emerge from studies undertaken by Gross and Lane (2007) and Kiesling and Manning (2010). These general themes include; (1) escapism, the garden as an antidote to more stressful parts of life; (2) ownership and identity, attachment to and creating place through gardening; (3) connectedness to nature, primarily relationships with fauna and flora; (4) social relationships, where gardens reflect memories but are also places for relaxing with family, friends and creating neighbourhood connections; (5) a duty of caring, where gardens represents ways of showing affinity with and caring for the environment; and (6) health, both physical and mental, this accords also with the escapism theme. We will return to these themes later in the Dunedin study discussion. The relationships that people develop with their gardens and their importance occur irrespective of location and garden type.

4. Gardens undervalued

Garden research is limited (Holbrook, 2008) and has tended to be directed at communal gardens and larger more formal gardens rather than towards gardens at the individual domestic householder level (Hitchins, 2007a; Longhurst, 2006). Social scientists in the main show limited interest in the domestic garden. Bhatti and Church (2000, p.184) note that: 'the contemporary garden has been ignored in social science generally and leisure studies in particular'. Hondagneu-Sotelo (2010) talks of 'glazed looks from her colleagues' when revealing she is undertaking garden research. Yet, as demonstrated, gardens are a vital component of the lives of many, arguably most, people in urban western society. However, gardens are now increasingly under threat from a number of sources. The extensive study of Australian backyards by Hall (2008, 2010), shows in detail the trend towards building larger homes on smaller plots of land with the associated loss of garden space. Between 1984 and 2003 he reports, the average house floor area rose by 40% to an average of 227.6 m², with a concurrent reduction

in lot size (land area for each home) from 802 m² to 735 m². In reality, many Australian lots are currently only around 400 m² (Hall, 2008, 2010). In the UK, a quite different process is contributing to the loss of garden space, the transformation of front gardens into paved car parking spaces. One study in Ealing, London estimates that the average front garden is now 68% hard landscaped, i.e. paved/non-vegetated (Ealing LA21, 2005). The reduction in garden size through increased house sizes, growth of car space combined with trends towards hard landscaping, garden structures and 'instant' gardens (Bhatti & Church, 2001; Hitchins, 2006, 2007b; Timms, 2006) is ironically occurring at the same time as there is growing public interest in gardening, and developing awareness of the range of benefits that gardens offer.

The literature on gardens mainly divides into two strands which remain largely mutually exclusive; (1) gardening for wildlife (e.g. Baines, 2000; Gaston et al., 2007; Jones & Reynolds, 2008; Ryall & Hatherrell, 2003; Ryrie, 2004; Toms, Wilson, & Wilson, 2008) and (2) gardening as a leisure pursuit and reflective of social conditions (Bhatti & Church, 2000; Diamant & Waterhouse, 2010). The next part of this paper attempts to bridge these strands within the context of our New Zealand garden study, by exploring the relationship between people and nature, and by identifying what it is about gardens that make them valued and valuable to their users.

5. The New Zealand garden study

In New Zealand, only limited garden research has been undertaken, most of which focuses on urban ecology generally, and species occurrence in particular (Freeman & Buck, 2003; Freeman, Mathieu, & Van Heezik, 2006; Stewart, Ignatieva, Meurk, & Earl, 2004; Van Heezik, Smyth, & Matthieu, 2008). There has been minimal research around urban dwellers' relationships with their gardens even though 86% of the population lives in areas classified as urban and for most of these people their experiences of nature will be urban ones. The aim of the study overall was to develop an understanding of the relationship householders have with their gardens and to examine whether it is possible to motivate them to be aware of and commit to improving conditions for native wildlife in their gardens. This paper deals with one part of this relationship; what it is about gardens that make them matter to people and if and why gardens promote householders' connections with nature?

5.1. Method

The study was undertaken in Dunedin, a city of some 120,000 people in the South Island of New Zealand. Located around a harbour and adjacent to the sea, the land rises rapidly into moderately steep hills that overlook much of the city, presenting a green and pleasant vista. Gardens make up approximately 36% of the urban land and 46% of the residential area (Mathieu, Freeman, & Aryal, 2007). They vary in size from small gardens in the more densely populated flat part of the city, South Dunedin where average household income is relatively low (here house site size can be as low as 272 m²) to large gardens in the hill suburbs (where sites can be 830 m² or more) (Dunedin City Council, 2006).

Householders were recruited, in February 2009, through advertisements in the local free newspaper and in news bulletins at two of the city's largest employers, the council and the University of Otago. The advert, headed 'Gardens needed!' stated that "Gardens of all types, sizes and condition are required for a study" and asked anyone interested to leave their contact details by email or telephone. No further information on the purpose of the study was given. Fifty-five households (approximately half the number volunteered) were selected to represent as far as possible a spatial distribution of gardens across the city. The large number of

volunteers did mean that selection was possible to overcome some biases in the sample; e.g. garden size and location, but we could not control for the motivation of the volunteers. Voluntary recruitment was necessary as repeated contact with householders would be required over the study period. All householders were provided with an information sheet about the study and asked to sign a consent form. The information sheet stated: "This study aims to find out how people feel about their gardens and how much they know about the plants and animals in their gardens. We also want to record what plants and animals can be found within a range of typical gardens". It went on to explain that participants would be asked to take part in two interviews, do two photo exercises and that they would need to allow the researchers to undertake biological studies in their garden. No monetary or other incentives were offered but participants were informed that they would be provided with data on their garden and would be informed about the progress of the study. The study gained ethics approval from the University of Otago's human ethics committee and all participants were required to give their written consent to participate.

Once recruited, householders participated in two interviews; one at the start of the study in March–April 2009 and a second follow up interview, in early 2010. The longitudinal nature of the study allowed the researchers to benefit from relationships developed with owners over the study time-frame and to identify changes in householder behaviour and attitudes resulting from involvement in the study. Interviews took place in the participants' homes. In the interviews, householders were asked about their gardens using a standardized questionnaire which was designed to enable us to explore the existing relationships the householder had with their garden. The questionnaire had 2 main sections. Section 1 asked about general information about the householder, e.g. age, education, household composition, length of residence. Section 2 asked questions about the garden, its importance, use, gardening practices, presence of native species and questions about birds, plants and animals. The follow up questionnaire administered 8–12 months later followed a similar format. Some of the questions in Section 1 were dropped such as age, education and reasons for buying their home as these would not change. Questions about the garden were retained. Additional questions were included about the use of the information that was provided about their garden, changes to their garden practices or to how they view their garden, together with questions about their experience of being involved in the study.

The results and discussion presented in this paper focus on the findings from the two interviews and photographic exercises. The interview part of the study provided primarily qualitative data. A combination of closed questions (with preset categories) and open ended questions were used. Responses were analysed through a simple 'response analysis' where responses were placed in thematic categories according to the nature of the responses and simple frequency counts undertaken. The interviewer completed all the questionnaires, writing in detail and as far as possible verbatim the participants' responses. The responses were coded with reference to a simple thematic analysis combined with pre-determined categories or themes and themes or categories that emerged from the more open ended responses. The extensive verbatim recording of respondent's responses also allowed for a more nuanced assessment of responses to emerge.

Each of the fifty-five properties was visited on approximately 10 occasions during which time plant species, vegetation structure, invertebrates (collected through pitfall traps) and birds (4×5 min bird counts) were recorded (authors in prep.). In late 2009 after the first interview but before the second interview, householders were given some feedback on the results of the biological surveys. This included a general indication as to how their garden compared to

other gardens in the study in terms of overall vegetation character, attractiveness for birds, and proximity to non-garden natural areas, together with an interesting feature we had noted for each property. This feedback was seen as important in engaging householders with the study and as part of reciprocal relationship researchers had with participants and a way of sharing some of the benefits of the study, in this case knowledge gained about garden species.

5.2. Character of the households in the study

As has been found in gardening studies overseas, the householder volunteer sample was predominantly female (39, males 16). There was also a tendency towards older participants, 13 were aged over 65, with 29 aged 45–64 and 13 aged 25–44. Most households were couples without children or with grown children. We asked a series of standard questions about the house in order to gain an understanding of the ways in which the householders valued their homes and gardens, why they had chosen particular houses and whether the garden was an influencing factor in choosing their home. Most householders were long term residents: only 13 had lived there less than 5 years, whereas 20 had lived in their home over 15 years. Attachment to the garden was often identified as a reason not to move house and was an especially pertinent concern for some elderly householders one of whom noted that: The neighbourhood has changed and now houses are rentals with people who don't garden or care about them. She would leave if she didn't like the garden so much (female (age) 65+, length of residence (R) 45 years).⁴ Another had thought about leaving but had nice neighbours. She thought the garden was becoming too big but will get help with it when necessary. She recognised that eventually she will have to move though. In the past the garden provided vegetables for her family of five children but now she's on her own (female, 65+, R36).

We did not specifically ask about socio-economic status but used property value data, available on the city council's public rates data base as an indicative guide. Most properties were in the middle band of the property price range, that is 32 were between NZ\$200,000 and 400,000, with the range for all properties being from \$132,000 to \$1,125,000. The situation of diminishing vegetated areas in gardens identified by Hall (2008, 2010) was not present in our study. Forty-one properties still had in excess of 50% of their area that was vegetated, with 29 having 60–80% vegetated area. The vegetated area was calculated by subtracting all built or hard landscaped areas from the total property area. Hard landscaped areas included; house, garage, sheds and other buildings, paved areas, driveways and large structures such as decks. By international standards, the gardens in our study were large and well vegetated, features typical of New Zealand gardens, a finding reflective of Longhurst's study of New Zealand's domestic gardens (Longhurst, 2006).

6. Results

6.1. Valued garden features: photo exercise results

Once basic data had been collected we wanted to know about householders' attitudes to and relationships with their gardens, in particular their attitudes to native and non-native biodiversity. At the start of each interview householders were asked during a walk around their garden to point to ten things that mattered to them in

⁴ The information in brackets gives some information about the respondent's sex, age, and length of residence.

their gardens. The interviewer then took a photo of the feature. Respondents were asked why they selected each feature and their response recorded. The photos were analysed by reference to their primary feature invariably the reason for the photo being taken, such as a favourite tree, set of flower beds, a view, or a place where children play. A thematic analysis of the photos was undertaken, one primary theme per photo ($n = 55 \times 10$ for 2009 and again 550 for 2010). The photos were allocated into categories (Fig. 1) according to the primary feature for each photo as given by the respondent. Four things stood out as being particularly valued by householders; plant features, structures, food and views. As in the Australian study by Head and Muir (2007, p.47), we found that participants' relationships with their backyard are shaped primarily 'by the plants and trees growing in their backyards and only then by birds and animals'. In the photograph counts, plants including native and exotic species and plant groups such as flower beds were by far the most commonly photographed features. Other studies have also noted the primary importance of plants for householders (e.g. Davies et al., 2009; Ryall & Hatherell, 2003). The features that the householders wanted photographed during the 2009 and 2010 interviews remained relatively consistent but with some reduction in the number of both native and exotic plants and a rise in the number of structures (mostly decks and sheds) (Fig. 1).

6.2. The overall value of gardens

All our participants said their garden was important to extremely important to them, and for half their garden had been a factor in choosing the house. The answers to the question 'how important is your garden to you' showed the benefits of a longitudinal study where a relationship develops over time (one year in this study) with householders. The benefits were apparent in that responses in the second interview, which took place 8–12 months after the first interview, were usually far more detailed and animated, reflecting the relationships built up with the interviewee over that period. Gardens clearly mattered greatly to respondents. One spoke for many when she said "It's my life" and it's, "peacefulness" (female 54–64, R14). Another also older female respondent estimated that it occupies between 1/3 and 1/2 of her time – doing, thinking or producing produce (female, 65+, R10). Others like one single parent referred to its importance as space for children and as a place for relaxing (female 35–44 with children, R11). For this respondent and others the importance was not about gardening but about more

general enjoyment, described as 'the opportunity to sit out there and have a cup of tea' (male, 45–64, R3).

Although gardens varied in size and character with different functions depending on family structure, age and time of life, the garden was always important. Having established the importance of gardens we were then interested to establish why they were important and to ascertain whether the criteria identified internationally as important namely, health, escapism, ownership and identity, a duty of caring, social relationships and connection with nature, were reflected in the Dunedin setting.

6.2.1. Health

Health benefits, both physical and psychological and the healing properties of gardens were constantly reiterated, principally in terms of de-stressing from life and work, with health benefits being mentioned as especially important by the elderly. These healing properties were evident in one Dunedin householder's relationship with her garden: when she talked about how she's always been interested in gardens but never did it properly until she bought a house, saying that "if you love a garden you are never bored". She talked about her garden relationship as a "psychological thing" (female 35–44, R15). People also recognise the spiritual aspects of gardens referring to the fact that it "Brings a lot of happiness" such that "even old people can still enjoy a garden" (female 54–65, R25). There were direct green references relating to mental well-being, "There is something soothing about the earth in your hands" (female 65+, R33). A more emphatic statement, came from an older householder with a bad heart, and a keen vegetable grower, when he said he'd "be ***** without it" (male 65+, R20). One of this householder's chosen photos shows him holding some potatoes he's grown.

Gardening can provide useful occupation and sense of purpose. One ex-farmer described how it gave him a feeling of self worth as he was used to being self sufficient. Others mentioned specific benefits for spouses who were ill and gained pleasure looking at it, or the physical aspects, as an aid in managing arthritis, or rehabilitation when recovering from a stroke or heart attack. The garden relationship was revealed as being both complex and often profound, consistently revealing the 'healing' properties identified as important by Roszak (1996). However, for a few, usually elderly householders, gardens can also exacerbate some of the problems associated with poor health when householders are unable to care for their gardens: "When you develop injuries, you can be very uncomfortable – frustrating seeing the garden and not being able to maintain" (female 54–64, R23).

6.2.2. Relaxation and escape

The need to have a place to escape the stresses and intrusions, particularly of work, city life and even family was another consistent theme amongst householders. The garden was described as a great way to unwind and forget about the work week (male 45–54, R3.5) and a refuge, place to go in tough times to feel better (female, 54–64, R16). One used the garden as a place where people couldn't find her so she would be left alone (female 45–54, R4).

When asked what activities were undertaken in their garden in 2009, 54 out of the 55 households said they did gardening and 53 said they use it for relaxation (see Table 1). The need to escape was again tied up with health benefits, particularly mental health and well-being. It seemed to be especially important for those in full time work as a counterpoint to the stresses associated with their jobs. The notion of the garden as 'refuge' was mentioned across all age groups and life stages.

6.2.3. Ownership and identity

This was clearly demonstrated in the often highly idiosyncratic approach of householders to the process of 'creating' their gardens.

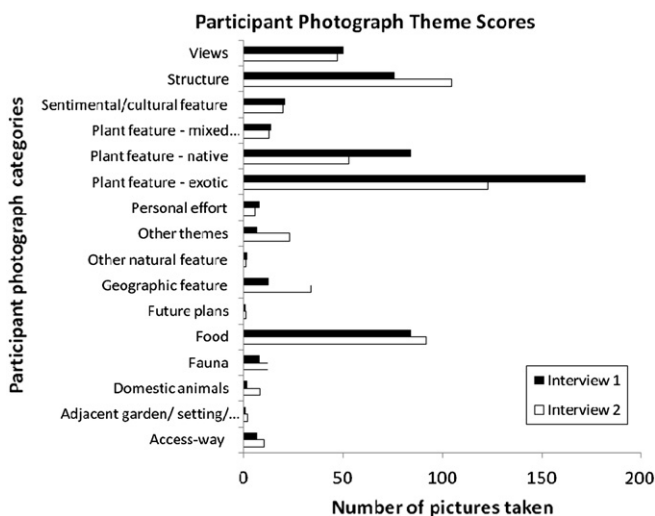


Fig. 1. A thematic analysis of photographs of chosen features taken by the 55 householders at the start of each interview: 2009 (interview 1); 2010 (interview 2).

Table 1
General activities undertaken by householders in their gardens.

General activities	2009	2010 (<i>n</i> = 55)
Gardening	54	51
Relaxation	53	50
Watching wildlife	47	46
Meals	42	48
Socialising	41	39
Play	28	29
BBQ	28	25
Pets	25	25
Other	20	20
Sport	11	17
Reading	8	4

Table 2
Common gardening related activities undertaken by householders.

Gardening activities	2009	2010
Weeding	54	54
Planting	52	53
Pruning	52	52
Composting	50	48
Veg. growing	48	48
Watering	46	50
Mowing	44	44
Other	11	6

For one householder, it was about creating an impressive rose garden (6 of his 10 chosen photos show roses, his garden was home to over 150 bushes), for another it was about retaining and enhancing a natural bush/forest environment. Householders talked with great pride about how they had developed their garden over both long and relatively short periods of time. A resident with a long association with her house described how “When we moved here it was a state house with one silver birch tree, no trees or shrubs”. The property now has more trees than any other in the neighbourhood and she is still planting (female 54–64, R25). Another householder (female 25–34, R2) living in a relatively industrialized, low income neighbourhood wanted to create a garden as an antidote to what she described as her ‘visually unattractive neighbourhood’ and despite having one of the smallest gardens in our study had invested a lot of time in its transformation. She described how she had pulled everything out, put in lawn, put up fences and a gate, painted the fence, chopped down out of control trees, removed roses and shrubs as they weren’t to her taste – too ‘grannyfied’ (see Fig. 2 for photos of her redesigned garden).

The process of creation and identity was ongoing throughout the life of the gardens. One householder reflected a common view of the garden as being ‘a work in progress’. Indeed, this householder since moving in 5 years previously, had removed hedges, put in a vegetable garden, a side garden and replanted the entire front garden. The process of creation was evident across the study, with all 55 householders having changed their gardens since moving into their house. These changes were most commonly done by planting (52), hard landscaping i.e. with stone, bricks, wood or

other non-vegetated material (21), adding structures (24) and removing vegetation (25). For most householders, this process also involved maintenance activities such as weeding (54), pruning (52) and mowing (44). Developing and caring for the garden was identified as an ongoing process (see Table 2).

6.2.4. Care

Caring sometimes expressed in the literature as a ‘duty of care’ was expressed in two key ways; through a feeling of responsibility to nature as well as a broader environmental responsibility. This was noted in the interviews where one respondent describes her gardening as “An attempt to recreate what we destroyed” but recognised it as a human interpretation of nature, being about controlling/taming nature and using nature to create a human thing that might look as if it is natural but it is not. She was concerned that having removed ourselves from nature to make our world safe we have also removed ourselves from part of our animal nature (female 35–44, R14). Some saw gardening as a duty to nature. Another respondent believes that it helps the environment if everyone looks after their own patch, where without gardens you don’t respect/know about/care about nature (female 45–54, R18). Gardens were seen as a means for learning to care about life.

6.2.5. Productivity

The urge to encourage and guide nature was closely aligned to another strong theme amongst our householders, the need to be productive, notably the provision of food with 48 households growing vegetables. For some households growing vegetables was about connecting with the earth, for others it was primarily a financial necessity. For one householder it was very important to know she was eating chemical-free produce. Some had strong



Fig. 2. Views of the garden created by one householder to increase its attractiveness.

views, seeing growing produce as essential and as a 'good thing' for people to do. Vegetable growers sometimes linked growing produce to a wider environmental, social and political commitment. One very keen community-oriented gardener grew vegetables for his own family, shared produce with the 'whanau' (Māori term for wider family), and had neighbouring children coming to help and to play in the garden. He saw his garden as a way to connect young people with the land. He perceived gardening in a political light as a 'strategic challenge to capitalism'. In this householder's photographs 8 out of 10 related to food production. A second householder emphasized financial and environmental concerns acknowledging that whilst our parents did it out of financial necessity, we have necessity not so much financial as environmental. He argued the case that with climate change the solution is growing your own vegetables and doing things locally; "Buying locally will help save the world, not putting petrol or electricity prices up" (male, 45–54, R7).

Growing food and striving for self sufficiency was seen as an integral part of a wider environmental responsibility as well as a pragmatic way of reducing reliance on commercial consumption and of saving money. In their efforts to achieve productive gardens, householders frequently referred to the roles of social relationships.

6.2.6. Social relationships

Gardening has elements of a solitary activity but it is also important in forging and supporting social relationships. These can be relationships developed in the garden, as one elderly householder explained: "Garden is a point of communication with grandson, he's been in trouble lately" (male 65+, R32), or with the wider community. One elderly gardener described how his garden relationship developed over his lifetime. When he was young he thought that people who grew flowers were 'pansies' but now he himself propagates flowers and had entered flower shows. He had developed social connections through gardening, was a member of dedicated flower groups, provided flowers to the church and took flowers to the 'old folks home' every week. In other interviews, productivity and vegetable growing was often mentioned as encouraging the social side of gardening, in fostering relationships both with family and the wider neighbourhood and as offering an opportunity to cement neighbourhood relations through swapping produce. One example given was "letting neighbouring children pick flowers for their Mum" (female 65+, R37). There were many positive comments about how gardening provides opportunities to talk to neighbours and that it provides a point of conversation even if people aren't necessarily gardeners themselves. Householder's positive images of gardeners are reflected in the statement from one respondent: "gardening people are lovely people" (female 54–64, R11). For the oldest householder in our study, her garden was a point of connection with earlier relationships "Many plants are memories of friends, they have all gone" (female 65+, R33). Gardens were also sites for a range of social activities: in 2010, some 29 households said they were used for play (28 in 2009), eating meals 48 (42 in 2009), general socialising 39 (41 in 2009) and for BBQs 25 (28 in 2009) all of which are fundamentally social activities (Table 1).

6.2.7. Connection with nature

The final aspect of gardening we consider here connects to the 'biophilia hypothesis', with gardens as a reflection of the 'innate tendency to focus on life and lifelike processes'. Only a few talked directly about gardens as a connection with nature. However, acknowledgement of that connection was implicit in nearly all the conversations we had with householders. This ranged from recognising gardens as a natural place in which to relax and de-stress "having green things around is very comforting" (female 45–54,

R15) to more explicit stated relationships with nature "gardens are a remnant of communication with the earth" (female 45–54, R7). Feeding birds, planting and watching things grow were commonly expressed ways of connecting with nature. This was expressed by several householders including one who owned a very large garden as one way we can remain connected with nature and thus it has an important part in urban life (female 65+, R, 11). This respondent's garden contains a large remnant of largely native bush (see Fig. 3) and its own stream, yet is only a 5 min walk to the city centre.

Participants had strong and often complex relationships with plants and were especially interested in the natives–exotics distinction. In New Zealand where many native plant and animal species are endemic (i.e. found nowhere else) planting native species and supporting native species features high on the conservation agenda. The presence of quite substantive patches of largely native habitats within Dunedin's urban fabric has been noted in a number of habitat studies of the city (Freeman & Buck, 2003; Mathieu et al., 2007).

A few participants specifically referred to how participation in the study had made them more aware of native plants, they were more able to differentiate between native plants and exotics and had adapted their garden practices to plant more natives. One catalyst for this was the interest shown in the invertebrate sampling and results that were fed back to participants. Participants felt that through the study they understood better the ecological interrelationships and wanted to support invertebrates or "bugs" and "critters" as they were commonly called and one way they were able to do this was by planting natives. Plants also strongly reflected personal values and historic relationships. One large Karaka tree (*Corynocarpus laevigatus*) was indicated to be a remnant planted by indigenous Maori, prior to European settlement.

Plants were spoken of as holding historic memories. Plants taken from parents' gardens, plants as gifts on retirement, plants to commemorate loved ones (a son killed in a car crash), Christmas trees from when they were grown for pocket money 30 years ago, a fuchsia planted on the property by the now elderly owners' parents and rhododendron plants that are used by children as 'spaceships'. Other relationships with plants were more negative, particularly 'battles' between neighbours over hedges and spray drift (disliked as it prevented apple tree fruiting), intruding weeds and even direct theft of plants. Certainly, caring for plants generates real relationships with nature but alongside this was often strong emotional involvement with plants. Plants also transcend spatial



Fig. 3. View of native trees from inside a house. This house was designed to maximize connection with the 'bush' garden.

boundaries of connection, as explained by a participant who once had 100 plants inside her house, and the common mention of views of nature from inside the house. Several photos were of such views and taken from inside.

Householders' connection with nature was, therefore, complex and exhibited in a range of ways. Their connection with nature was through growing plants and in some ways wrestling in a direct way with nature: its aphids, the weeds and the climate. The householders also showed interest through for instance, bird feeding (40 out of 55), a belief in cat control (25 out of 55), a willingness to plant native plants (45 out of 55) or a preference for native plants (22 out of 55).

7. Discussion: validating and valuing the garden

Being part of the study in and of itself, proved to be a valuable exercise for participants as it enabled them to think about and articulate what it was about their garden that mattered to them and encouraged them to analyse their own personal garden relationship. Some householders found the study validating in that they felt more comfortable with their own more relaxed gardening styles, especially when they realised this approach had benefits for nature. One householder stated that they believed: "they shouldn't feel they have to control every aspect of their garden... not such a stress on neatness" and "gardens don't have to be immaculate to be enjoyed" (female 35–44, R8). Another part of the validation was that through the study, several householders came to appreciate and feel that their garden had something to offer. One householder liked "the fact that our garden harbours wildlife that someone is interested in...intriguing to think of having something to offer [to our study]" (male 65+, R7). The process of being in the study was reported to have helped some householders assess their own relationship to their garden "Looking at what I value in the garden has helped" (female 45–54, R15). In many cases it gave householders confidence in what they did and gave some the confidence to make changes and try new things, such as planting native plant species, tidying up less and being more relaxed in their gardening style.

There is every indication that the 'biophilia hypothesis' in the sense of creating connections to nature applied amongst our householders. Their gardens provided them and their families with regular and intimate contact with nature, albeit sometimes in a confrontational manner as observed by Head and Muir (2006), Hitchins (2006) and Hondagneu-Sotelo (2010) where gardeners seek to wrest control of their garden from nature. Through their gardens, householders develop a sense of connection with the earth. This is done through growing roses, vegetables, recognising damp or dry parts of the garden, through their children climbing the hedge, watching the birds from inside when recovering from ill health or when age precludes active gardening. In several ways our study differed in its findings and the trends identified, from those seen in some studies internationally (Hall, 2010; Head & Muir, 2007; Hitchins, 2007b). We found limited evidence of the professionalization of gardening, with its focus on creating 'instant' gardens, hard landscaping and elaborate structures (Hitchins, 2007a). Only one garden had been subject to a one-off garden makeover. Instead, there was a sense of the garden as a refuge from the commercial world, hence the emphasis on growing vegetables and exchanging and acquiring plants from neighbours and friends, as well as creating one's own cuttings.

For the older members of our study in particular, there was a sense of gardening as a lifelong process, something learned over time, adapted to over the different stages of life and growing in importance over a lifetime. Also there was a sense of realism about gardening and relationships with nature, an acceptance of success and failure, as well as a pragmatism about what could be achieved

and over what time-frame. Obvious too on occasion, was a sense of altruism evidenced through the sharing of produce with neighbours (notably by keen vegetable growers) and support for wider ecological values.

The householders' relationships with their gardens were complex, frequently quite idiosyncratic and changed in accordance with a myriad of factors such as life stage, and health.

8. Conclusion

Gardens matter, with the most important reasons being for health and well-being (physical and psychological), for relating to people, neighbours, family and friends and for connecting with nature. Householder's, whether they class themselves as gardeners or not clearly affirm and enunciate, (albeit in different terms) core concepts, associated with Wilson's biophilia hypothesis, the 'connection to lifelike processes' and importance for the 'spirit'. Similarly they intuitively affirm the therapeutic dicta 'nature heals' (Roszak, 1996). The need to connect with nature seems deeply rooted in the psyche of our householders, but the manner in which it is expressed, for example, looking at the view of the garden from the lounge, growing flowers for neighbours' children and sharing produce are ways seldom acknowledged and valued by conservationists. Clayton (2007) states that gardens are reflective of wider social and cultural complexities. Ownership is important in this sense and seems to be a vital precondition for developing identity. Gardens are seen as an opportunity to create domestic landscapes that reflect important personal values such as being productive, contributing to a better environment by planting trees, making walls for skinks or for family togetherness.

Head and Muir state "There is a considerable reservoir of environmental stewardship and good will amongst backyarders. More people than not are keen to do the right thing" (2007, p. 166). We found through the study and through engaging with householders over a prolonged period that this clearly was the case. The provision of feedback on the study to householders, including information on their garden and how their garden did or could contribute native biodiversity generated immense interest. They were consequently keen to implement more biodiversity friendly practices such as reducing pesticide use. These positive moves reflected an innate willingness on the part of householders to exhibit an environmental 'duty of care', rather than being a response to any 'educative' activity associated with the study. Working with householders and their gardens may well be the most direct way to enable positive environmental change in cities. There is a largely untapped potential for creating landscapes supportive of both native biodiversity and the well-being of people utilizing the urban garden and householder matrix whilst also increasing landscape resilience (Chapin, Folke, & Kofinas, 2009). The considerable latent interest evident amongst our householders suggests gains towards engendering positive gardening practices that contribute to supporting the health of people and native biodiversity may not be very difficult to achieve. We conclude with the words of one of our householders, who summarises feelings expressed many times over in our study: "My garden is an expression of me". We would suggest that understanding "me" is the first step on the path towards enhancing native biodiversity in the city. We encourage further studies that take a combined socio-ecological view of gardens, and the values and services that they provide.

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